

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

NON-PROVISIONAL PATENT APPLICATION

Title: GOLF BALL

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CROSS REFERENCE TO RELATED APPLICATIONS

This application is a Continuation-In-Part of U.S. Patent Application Serial No. 09/922,573, filed on August 3, 2001, entitled GOLF BALL, and claims the priority date of Spanish Patent P200101695 filed on July 19, 2001, and Spanish Patent P200300683 filed on March 07, 2003. The basis for priority in this case is the Paris Convention for the Protection of Industrial Property (613 O.G. 23,53 Stat 1748). The Spanish patent applications were filed in The Official Patent and Trademarks Office of Spain.

DESCRIPTION OF THE INVENTION

Field of the Invention: Golf Equipment.

State of the Prior Art: At present, the coefficient of forward resistance in golf balls is attained by hollow channels distributed around them, which fail to reduce the effect of the wind, particularly side wind, on the ball. As a result, the resistance is not sufficiently reduced.

DESCRIPTION OF THE INVENTION

A golf ball having a smooth or dimpled surface generally consisting of a sphere with peripheral channels spaced and intersected at distances on the surface, with part of the air

flow on the front over-pressure area communicating with the rear depression of the ball in its forward movement, facilitating aerodynamic air circulation through it, thereby reducing resistance. The channels also facilitate rotation and lift, increasing the distance the ball travels.

The surface of the golf ball can be either smooth or have the typical dimples over the rest of the undrilled or non-grooved surface.

Orifices are preferably added through the ball and parallel to planes tangent to the surface of the ball, crossed over and inter-communicated on different planes that form curved interior ducts facilitating the internal circulation of the air as the ball turns.

The golf ball can use a series of diametric holes and several holes parallel to the diametric holes, which are properly spaced at appropriate distances

The transverse cross-section of the peripheral openings and channels may be circular or rectangular, and they may also be semi-circular or trapezoid, with the larger or smaller opening outwards. The transverse cross-sections may also use spherical segments.

The frontal air flow navigates the frontal over-pressure section of the ball (F) with the depression or rear (A) along the peripheral channels and also passes through the openings in the front half of the ball, with or without its rotation, leading the airflow through to the rear zone of the ball. On the rear face, the peripheral channels eliminate or reduce the high level of turbulence caused with flat or smooth spheres.

The advantages of the invention include a reduction of the resistance, the resulting aerodynamic perforation is greater and occurs at all Reynolds numbers or speeds of the ball. In golf balls with dimples, resistance is lessened for a single Reynolds number, reaching greater height during the rotation because of the channels and, as a result, greater range. These

improved characteristics permit the use of golf balls having greater weights and sizes, resulting in the possibility of an enhanced stroke with greater control of the ball. The path of the ball is less affected by wind, particularly side wind, and is more stable during its advance.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a schematic view of a sphere or ball without the devices to reduce the resistance.

Figure 2 shows a schematic and cross-section view of the ball of the invention.

Figure 3 shows a schematic view of the ball in the invention.

Figure 4 shows a schematic view of a variant.

Figure 5 shows a schematic and cross-section view of the ball of the invention Figure

6 shows a schematic, partial and cross-section view of the ball.

Figure 7 shows a schematic and cross-section view of the ball.

MORE DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a smooth surface ball, the front over-pressure area (F) and the rear depression area (A), illustrating the resulting turbulent profile of the airflow experienced in the rear depression area when the ball is in flight.

Figure 2 shows the cross-section of the golf ball (1), the circular peripheral channel (2) and the orifices through it (3, 4 and 5), the arrow shows the direction of the air flow, and the streamlined airflow profile that results from the channels and orifices which guide the airflow while the ball is in flight.

Figure 3 shows a view of the golf ball (1), the peripheral channels (2 and 7) which cover the outer surface of the ball, and the through orifices (3, 4, 5 and 6) which direct airflow through the ball when the ball is in flight.

Figure 4 shows a variant of the golf ball (1), the peripheral channels (2 and 7) which cover the outer surface of the ball, with no through orifices.

Figure 5 shows a cross-section view of the ball with the through orifices (3 and 4) and the peripheral channels having a spherical segment shape (8 and 9).

Figure 6 shows a cross-section view of the golf ball (1) illustrating the profile of the peripheral channels which cover the outer surface of the ball(2).

Figure 7 shows the cross-section of the golf ball (1), the crossed over and inter-communicated orifices (3, 4 and 5) on a plane which form curved interior ducts facilitating the internal circulation of the air as the ball turns. The arrow (10) shows the direction in which the ball turns.